24P312 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19PCHE3C11 - REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours Maximum : 30 Weightage

Section A

Answer any ***eight*** questions. Each question carries 1 weightage.

1. Describe Swern oxidation with mechanism.
2. Describe Riley reaction. What is its importance?
3. What is Birch reduction? Explain with example
4. What is Pinacol coupling? Explain with examples.
5. What is Gilmans reagent? How does it reacts with ethyl iodide?
6. Why organo copper reagent reacts with the less reactive acid chlorides even though they don't react with the more reactive ketone?
7. What is the significance of vulcanization in rubber industry?
8. What is demjanov rearrangement?
9. Aziridine is weakly basic compared to other amines. Justify your answer.
10. Explain, why pyridine is more basic than pyrrole.
11. What are supramolecular devices? Give one example.
12. Acrylonitrile polymerize under anionic conditions. Why?

(8 × 1 = 8 Weightage)

Section B

Answer any ***four*** questions. Each question carries 3 weightage.

13. Explain the preparation, structure and use of following reagents. 1) Jones reagent 2) Collins reagent 3) PCC
14. Breifly explain the following reactions. 1) Sharpless Asymmetric Epoxidation 2) Sharpless Asymmetric Dihydroxylation

15. Identify the organic product of each reaction 1) Propanal with LiAlH4 2) Acetone with NaBH4 3) Ethybenzoate with LiAlH4 4) Ethyl nitrile with LiAlH4

16. Discuss the application of hydroboration reaction.

17. Illustrating with examples, explain the synthetic applications of the following reagents (i) Ceric ammonium nitrate (ii) DABCO

18. Discuss briefly the chemistry of Sanger's method for N-terminal analysis. How can this method be used to delineate the sequence of aminoacids in a polypeptide

19. Discribe the mechanism of Wagner-Meerwein rearrangement with suitable example

(4 × 3 = 12 Weightage)

Section C

Answer any ***two*** questions. Each question carries 5 weightage.

20. Discuss the mechanism of dehydrogenation with DDQ. Give one application of DDQ in the reaction related to (i) Aromatisation (ii) Preparation of salts of stable aromatic cations (iii) Oxidative cyclisation (iv) Oxidation of phenols (v) Oxidative dimerization (vi) Oxidation of benzylic group (v) Isomerisation during dehydrogenation.

21. What are the advatages associated with the solid-phase peptide synthesis? Sketch the steps involved in the synthesis of Phe-Ala-Val using Merrifield solid phase procedure.

22. Suggest the suitable mechanism of conversion of (a) cyclohexanone oxime to caprolactum, (b) Cyclohexanone react with N3H and H2SO4 to form caprolactum

23. Discuss about different molecular receptors for binding neutral, cationic and anionic guest molecules along with their non-covalent interactions.

(2 × 5 = 10 Weightage)

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